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MEMBRANE DIELECTRIC ISOLATION IC FABRICATION

Glenn J. Leedy

ABSTRACT

General purpose methods for the fabrication of
5 integrated circuits from flexible membranes formed of very
thin low stress dielectric materials, such as silicon
dioxide or silicon nitride, and semiconductor layers.
Semiconductor devices are formed in a semiconductor layer
of the membrane. The semiconductor membrane layer is
10 initially formed from a substrate of standard thickness,
and all but a thin surface layer of the substrate is then
etched or polished away. In another version, the flexible
membrane is used as support and electrical interconnect
for conventional integrated circuit die bonded thereto,
15 with the interconnect formed in multiple layers in the
membrane. Multiple die can be connected to one such
membrane, which is then packaged as a multi-chip module.
Other applications are based on (circuit) membrane
processing for bipolar and MOSFET transistor fabrication,
20 low impedance conductor interconnecting fabrication, flat
panel displays, maskless (direct write) lithography, and
3D IC fabrication.